ORIGINAL

BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of	)	
Amendment of Parts 2 and 15 of the	)	
Commission's Rules Regarding	)	ET Docket No. 96-8
Spread Spectrum Transmitters	)	

To: The Commission

COMMENTS

OF THE

AMERICAN PETROLEUM INSTITUTE

THE AMERICAN PETROLEUM INSTITUTE

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Amendment of Parts 2 and 15 of the Commission's Rules Regarding Spread Spectrum Transmitters	)	**ET Docket No. 96-8**

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The American Petroleum Institute ("API"), by its attorneys, submits these Comments in response to the Federal Communications Commission's ("Commission") Notice of Proposed Rule Making ("Notice") in the above-captioned matter.[1/] In that Notice, the Commission proposed to amend Parts 2 and 15 of its Rules and Regulations regarding the operation of spread spectrum transmission systems in the bands 902-928 MHz ("the 915 MHz band"), 2400-2483.5 MHz ("the 2450 MHz band") and 5725-5850 MHz ("the 5800 MHz band").

1. API applauds the Commission's plan to create a transition period to offer an incentive to spur the development of spread spectrum systems. API member

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[1/] 61 Fed. Reg. 15206 (April 5, 1996).

companies were among the early users of spread spectrum technology and will expect to be future users as well. In virtually every application where spread spectrum has been implemented, antenna gains in excess of 6 dBi have been used. Not only has the use of directional antennas permitted longer path links, but it has also enabled the angular discrimination of signals which minimize the potential for inter-system interference.

2. The Commission's rules assume a system configuration in which the antenna is connected to the transmitter with only a short length of transmission line. API believes that this assumption hinders the effective use of unlicensed spread spectrum systems in two ways.

3. First, API believes the FCC rules should accommodate for transmission line losses. Some API member companies and many other users often mount antennas on communications towers using several hundred feet of transmission line to connect the antenna to the transmitter. API supports the Commission's goal to limit the power input to the antenna system to one watt However, API requests the FCC to allow users to compensate for transmission line

losses by increasing the transmitter power and/or antenna gain accordingly.[2/]

4. Second, API believes that system certification unnecessarily limits users' options in system design. Many users design systems in other bands by selecting and combining FCC type-accepted components according to FCC regulations. For technical and economic reasons, these users may choose a transmitter from Manufacturer A, a transmission line from Manufacturer B, and an antenna from Manufacturer C. The Commission prevents this optimization through "system certification" in the 915 MHz, 2450 MHz and 5800 MHz bands. It would be a daunting task indeed to certify all possible combinations of components that could be useful for these applications. For point-to-point applications (and at remote sites in a point-to-multipoint

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[2/] API suggests that the following formula could be used to calculate a maximum allowable EIRP for each system.

Maximum EIRP (dBW) = 2 + (2/3 * GA)

where GA = Antenna gain in (dBi)

This formula is consistent with the Commission's proposal to decrease effective transmitter power by 1 dB for every 3 dB improvement in antenna gain and the baseline 4 watt EIRP when using a 1 watt transmitter and 6 dBi antenna. The formula also allows users to compensate for transmission line losses.

system) highly directional antennas are clearly superior because they reduce the effective interference area.

5. While API commends the Commission for attempting to eliminate the possibility of illegal after-market equipment, certifying only complete systems seems a disproportionate response to this problem. API believes the FCC could more effectively meet its goals by type-accepting components and then issuing rules regarding their integration and utilization in systems. This method would be consistent with FCC procedures in other frequency bands.

6. Before API companies use unlicensed spread spectrum radio equipment, the risks associated with the potential for interference are considered. While it is generally accepted that the potential for interference exists, the benefits associated with the use of unlicensed technology outweigh the disadvantages. API supports the Commission's method of limiting "equivalent" area of interference for spread spectrum systems operating in the 5800 MHz band. Notice at ¶ 16

7. While there may be greater usage in the 2450 MHz band than the 5800 MHz band, API is not aware of any interference cases among existing users in the 2450 MHz band. Furthermore, spread spectrum technology provides "anti-interference" countermeasures such as correlation code selection and or frequency hopping. These spread spectrum countermeasures, combined with frequency selection, antenna discrimination, and polarization, would normally be sufficient to avoid most potential interference cases.

8. The FCC noted that directional antennas may create an interference potential for other users within the main antenna beam; however, directional antennas reduce the interference potential for users outside of the beam. In addition, when coupled with the ability to select frequencies, the use of directional antennas should reduce the potential for interference even to users within the main beam, to acceptable levels. Thus, API supports the Commission's method of limiting "equivalent" area of interference for spread spectrum systems operating in the 2450 MHz band.

9. API shares the FCC's goal of promoting the development of private emerging technologies. Indeed, API emphasizes that much development of private emerging technologies has already occurred in the Part 15 ISM bands. Furthermore, since API recognizes that additional spectrum to support licensed spread spectrum systems is not likely to materialize, API supports minimal restrictions on the use of unlicensed spectrum.

10. As the Commission observed in its Notice, the current rules require that a system be designed to act as a frequency hopping system should the transmitter be presented with a data stream longer than that which could be completed in a single hop. Notice at ¶ 40 The Commission declined to change its criteria and will instead continue to require frequency hopping systems to actually hop, thereby spreading the spectrum and producing receiver gain. Notice at ¶ 40. API fully supports the Commission's decision because it will prevent proliferation of technically-inferior, single frequency radios.

WHEREFORE, THE PREMISES CONSIDERED, the American Petroleum Institute respectfully submits the foregoing Comments and urges the Federal Communications Commission to act in a manner fully consistent with the views expressed herein.

Respectfully submitted,

THE AMERICAN PETROLEUM INSTITUTE

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